REMARKS

Claims 1, 7 and 14-17 are pending for further prosecution in the present application. All pending claims are directed to the elected invention in the present application. Independent claims 1 and 7 have been amended to distinguish over the prior art of record. No new matter was added. Accordingly, Applicant respectfully submits that the present application is in condition for allowance.

I. Claim Rejections - 35 USC §103(a)

A. In the FINAL Office Action dated March 25, 2011, claims 1, 7, 14 and 16 are rejected under 35 USC §103(a) as being obvious over U.S. Patent No. 6,531,396 B1 issued to Chi et al.

Chi et al. disclose a process of sputtering a Ni-Pt alloy target. As an alternative, Chi et al. disclose a process of co-sputtering a nickel target and a separate platinum target. The targets for co-sputtering are referred to as "pure" meaning that they are not alloys. However, this indicates nothing with respect to unavoidable impurities, and as stated in Applicants last Amendment, these "pure" targets could have a purity of 1N (90wt%) and still be considered pure from the standpoint that they are not alloys. Further, 100% purity simply does not exist for such materials, and Chi et al. certainly fail to enable such a material. Accordingly, Applicant respectfully submits that Chi et al. fail to provide any disclosure at all to one of ordinary skill in the art with respect to the purity of Ni-Pt alloy, Ni or Pt targets.

According to the present invention, the Vickers Hardness of the claimed Ni-Pt alloy and target is drastically reduced in comparison to such alloys and targets known by one of ordinary skill in the art at the time the present invention was made. This enables the alloy/target of the present invention to be successfully subject to plastic working such as rolling. This is only able

to be provided by the present invention by increasing the purity level of the Ni-Pt alloy target to 4N or greater.

If the purity level of a Ni-Pt alloy is below the claimed range, Vickers Hardness will increase drastically and prevent the possibility of plastic working. Referring to U.S. Patent No. 2,269,497 issued to Vilensky cited by the Examiner and discussed later in this Amendment, it acknowledges the brittleness of a conventional Ni-Pt alloy (see column 2, lines 11-25, of Vilensky). The present invention also provides such a teaching. For instance, see page 3, lines 27-29, of the present application, as filed, which discloses that if the purity level is 3N (99.9wt%), Vickers Hardness will be approximately 130 Hv for an Ni-Pt alloy produced by melting and casting. If such a hard ingot is rolled, such plastic working will cause cracks to occur at the grain boundary (also see this same disclosure by Vilensky).

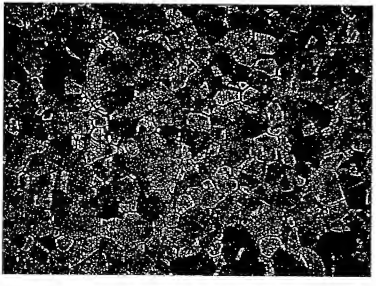
Since the hardness and brittleness is so high for a 3N purity alloy, there would have been no expectation by one of ordinary skill in the art at the time the present invention was made that a 4N Ni-Pt alloy would be any different. Nonetheless, the inventor of the present invention unexpectedly discovered that a melted and cast Ni-Pt alloy of a purity of 99.99wt% (4N) or higher provides an effective means for enabling the use of plastic working such as rolling to such an alloy. Accordingly, the inventor discovered that there is a causal relation between purity and hardness for this particular alloy. Thus, Applicant respectfully submits that it is not correct to state that this invention is merely directed to purity. Hardness of the alloy is an important claimed feature of the present invention and the ability to reduce the hardness of such an alloy in the manner required by the claims of the present application (i.e., via control of purity) was not known by one of ordinary skill in the art at the time the present invention was made.

Further, as described in the present application, a conventional Ni-Pt alloy target was produced by one of ordinary skill in the art at the time the present invention was made by sintering powder based on powder metallurgy methods. One of ordinary skill in the art relied on powder metallurgy techniques to avoid the hardness issue discussed above for such an alloy (i.e., cracks and fractures at the grain boundary of a cast ingot). However, a different problem is presented with a sintered powder Ni-Pt alloy target. Density is inferior with a sintered compact in comparison to a melted and cast ingot. The lower density enables gas component impurities to readily increase in the target. The lower density and lower purity result in increased abnormal discharge from the target during a sputtering operation. On the other hand, Ni-Pt alloy targets produced by being melted and cast are extremely hard and brittle and cracks/fractures routinely occur at the grain boundary when subject to required plastic working. Still further, processing the ingot into a tabular shape is difficult without generating cracks and fractures. The above description accurately describes the state of the art known by one of ordinary skill in the art at the time the present invention was made.

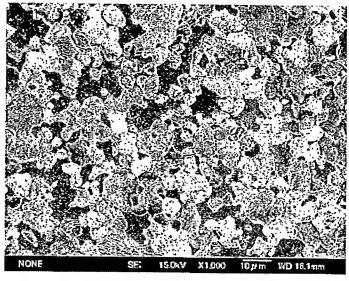
The present invention was able to resolve the above referenced problems with Ni-Pt alloy targets. A high density melt/cast ingot is formed which is different from conventional ingots and conventional sintered compacts. The "structure" of the target is different from conventional sintered compacts and the hardness is greatly reduced relative to conventional cast ingots.

In the FINAL Office Action, the Examiner states that "Applicants have not provided Figures showing how a rolled nickel-platinum alloy having the claimed purity would have a different structure than a nickel-platinum alloy having the same claimed purity that would be made by sintering powders or how the purity is critical to the claimed hardness". As discussed above, sintered articles cannot have densities as high as melt/cast ingots and sintered articles

thereby readily permit larger quantities of gas component impurities. Further, a texture of a rolled Ni-Pt alloy ingot is naturally much more uniform than a texture of a sintered alloy due to manufacturing process. The difference in uniformity and texture is shown in the photographs provided below. The purity being critical to the hardness was discussed above with there being a clear relation.



Texture of a Rolled alloy



Texture of a Sintered alloy

Ave. grain size 60um

Scale × 100

In conclusion, since Chi et al. fail to disclose a Ni-Pt alloy target having a purity of 99.99wt% or higher or any reason for providing same and even fail to disclose a production process thereof, one of ordinary skill in the art at the time the present invention was made would be unable to arrive at the claimed invention. Knowing the problem with brittleness of such an alloy ingot, one of ordinary skill in the art would have produced a sintered compact. This would lack the density, purity and reduced hardness required by claims 1 and 7 and would clearly lack the claimed structure required by claims 14 and 16. Here a "melted, cast and rolled target structure" and a "melted and cast ingot structure" refer to structures or textures of the alloy or target, not to process limitations. One of ordinary skill in the art is readily able to distinguish a melt/cast structure or texture from a structure or texture of a sintered compact. Thus, this should be interpreted as a structural limitation and should not be dismissed as a process limitation. The resulting structure or texture is being claimed, not the process.

Finally, if one of ordinary skill in the art at the time the present invention was made were to make a Ni-Pt alloy sputtering target via melting/casting/rolling techniques, one of ordinary skill in the art would follow the teachings of Vilensky (discussed in greater detail below). Vilensky requires the addition of a de-oxidizing agent (Mn) to the alloy to overcome the problem with respect to cracking and fracturing during rolling. However, the claims of the present application have been amended to require the Ni-Pt alloy to consist solely of Ni and Pt (and no more than 0.01wt% of unavoidable impurities) and not to have other alloy components such as a de-oxidizing agent.

For all the reasons stated above, Applicant respectfully submits that claims 1, 7, 14 and 16 are patentable and are not obvious in view of the Chi et al. patent. Accordingly, Applicant respectfully requests reconsideration and removal of the rejection.

B. *In the FINAL Office Action dated March 25, 2011, claims 1, 16 and 17 are rejected under 35 USC §103(a) as being obvious over U.S. Patent No. 2,269,497 issued to Vilensky.*

Vilensky provides the following disclosure to one of ordinary skill in the art (see page 1, right hand column, lines 11-25, of Vilensky):

> "I have found that in producing a high nickel-platinum alloy which is malleable in hot and cold state, **the addition of a small amount of de-oxidizing agent** added to the alloy during the melting procedure is important. Without a de-oxidizing agent there is a tendency during the melting and pouring of the metal for the nickel to oxidize and form nickel oxide occlusions which **cause cracking and weakening of the metal upon working, as for example drawing or rolling a wire or sheet**, bending the same, etc.
>
> To overcome this difficult I may add during the melting a small amount of the deoxidizing agent in quantities sufficient to reduce the nickel oxide formed and free the metal of oxygen."

Accordingly, while Ni and Pt may form the main components of the alloy of Vilensky, the alloy is also required by Vilensky to include additional components. The de-oxidizing agent can be Mn, Ti, Mn and Ti, or Li. See the right hand column on page 1, lines 24-55, of Vilensky. The amount of Mn required by Vilensky exceeds the upper limit of unavoidable impurities of the claims of the present application.

As stated earlier, the claims of the present application have been amended to be directed to an alloy (and target) consisting of Ni and Pt. Other elements are not present, unless in extremely small quantities as unavoidable impurities. Here, Applicant acknowledges reality in that 100% purity is not possible in real life. However, the impurities are limited to 0.01wt% or lower. No new matter was added; for example, a purity of 99.99wt% or greater by definition means that impurities are 0.01wt% or less.

Assuming the Ni-Pt alloy of Vilensky includes the de-oxidizing agent, the composition fails to overlap with that required by the claims of the present application. Alternatively, assuming the Ni-Pt disclosed by Vilensky does not include a de-oxidizing agent, then Vilensky

admits that his alloy will contain a large amount of oxygen as an impurity and that the alloy ingot will crack upon working. This provides a clear indication that the alloy is not of 4N purity and does not have a Vickers Hardness in the claimed range. Accordingly, Vilensky fails to disclose the invention required by the claims of the present application.

Further, one of ordinary skill in the art following the teachings of Vilensky would add Mn to the Ni-Pt alloy to prevent cracking of the ingot. This is opposite to that required by the claims of the present application and teaches away from the present invention which requires an alloy consisting of only Ni and Pt with a greatly reduced amount of unavoidable impurities. Thus, Vilensky fails to teach the present invention and, in fact, teaches away from it by requiring the intentional addition of Mn.

For all the reasons stated above, Applicant respectfully submits that claims 1, 16 and 17 are patentable and are not obvious in view of Vilensky. Accordingly, Applicant respectfully requests reconsideration and removal of the rejection.

C. *In the FINAL Office Action dated March 25, 2011, claims 1, 7 and 14-17 are rejected under 35 USC §103(a) as being obvious over U.S. Patent No. 5,282,946 issued to Kinoshita et al.*

Kinoshita et al. clearly disclose a "platinum-cobalt alloy" which includes a first additional element (which may be Ni of no more than 1.5wt%) and a second additional element. The majority of the alloy is cobalt or platinum with a significant amount of cobalt being included. Nickel, if present, is only included up to 1.5wt%.

This alloy is clearly different from the alloy now claimed by the present application. The claimed alloy consists of no more than 20wt% of Pt with the remainder being Ni and only a very small amount of unavoidable impurities (0.01wt% or less).

For this reason, Applicant respectfully submits that claims 1, 7 and 14-17 are patentable and are not obvious in view of the Kinoshita et al. patent. Accordingly, Applicant respectfully requests reconsideration and removal of the rejection.

II. Conclusion

In view of the above amendments and remarks, Applicant respectfully submits that the rejections have been overcome and that the present application is in condition for allowance. Thus, a favorable action on the merits is therefore requested.

Please charge any deficiency or credit any overpayment for entering this Amendment to our deposit account no. 08-3040.

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